

### The Claims

What is claimed is:

1. An optical apparatus comprising:

a plurality of optical apertures arranged in a circle, wherein each of said optical apertures corresponds to a unique sector of said circle and includes a blazed fiber Bragg grating that responds to selected wavelengths of light by radiating a radially directed light beam, said light beam being directable according to a specific wavelength of light chosen from said selected wavelengths of light; and

a source of multi-wavelength light operably coupled to said plurality of optical apertures.

2. The optical apparatus of claim 1 wherein each of said blazed fiber Bragg gratings are governed by the relation:

$$m\lambda = d (1 + \sin \phi)$$

where  $m$  = a whole number Bragg diffraction order,  $\lambda$  = wavelength of light in the fiber,  $d$  = a periodic grating spacing of index modulation in a core of the fiber, and  $\phi$  is an exit angle of said radiated light beam wherein  $\phi = 0$  is normal to a longitudinal axis of said fiber and further wherein said grating spacing  $d$  falls within a region  $0.8\lambda < d < 1.2\lambda$ .

3. The optical apparatus of claim 2 wherein said diffraction order is the fundamental  $m = 1$ .

1 4. The optical apparatus of claim 1 wherein said light beam is directable by expanding or  
2 contracting a radius of said blazed fiber Bragg grating.

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4 5. The optical apparatus of claim 1 wherein said source of multi-wavelength light includes a  
5 laser.

1 6. The optical apparatus of claim 5 wherein said laser is one of a plurality of lasers.

1 7. An optical beam steering apparatus comprising:

2 a plurality of serially concatenated optical apertures arranged in a circle, wherein each of  
3 said optical apertures corresponds to a unique angular sector of said circle and includes a blazed  
4 fiber Bragg grating that responds to selected wavelengths of light by radiating a radially directed  
5 light beam, said light beam being directable according to a specific wavelength of light chosen  
6 from said selected wavelengths of light; and

7 a source of multi-wavelength light operably coupled to said plurality of optical apertures.

1 8. The optical beam steering apparatus of claim 7 wherein each of said blazed fiber Bragg  
2 gratings are governed by the relation:

3 
$$m\lambda = d (1 + \sin \phi)$$

4 where  $m$  = a whole number Bragg diffraction order,  $\lambda$  = wavelength of light in the fiber,  $d$  = a  
5 periodic grating spacing of index modulation in a core of the fiber, and  $\phi$  is an exit angle of said

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6 radiated light beam wherein  $\phi = 0$  is normal to a longitudinal axis of said fiber and further

7 wherein said grating spacing  $d$  falls within a region  $0.8\lambda < d < 1.2\lambda$ .

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1 9. The optical beam steering apparatus of claim 8 wherein said diffraction order is the

2 fundamental  $m = 1$ .

1 10. The optical beam steering apparatus of claim 7 wherein said light beam is directable by

2 expanding or contracting a radius of said blazed fiber Bragg grating.

1 11. The optical beam steering apparatus of claim 7 wherein said source of multi-wavelength light

2 includes a laser.

1 12. The optical beam steering apparatus of claim 11 wherein said laser is one of a plurality of

2 lasers.

1 13. An optical beam steering apparatus comprising:

2 a plurality of serially concatenated optical apertures arranged in a circle, wherein each of  
3 said optical apertures corresponds to a unique sector of said circle and includes a blazed fiber  
4 Bragg grating that responds to selected wavelengths of light by radiating a radially directed light  
5 beam, said light beam being directable according to a specific wavelength of light chosen from

6 said selected wavelengths of light and by expanding and contracting a radius of said blazed fiber  
7 Bragg grating; and  
8 a source of multi-wavelength light operably coupled to said plurality of optical apertures.

1 14. The optical beam steering apparatus of claim 13 wherein each of said blazed fiber Bragg  
2 gratings are governed by the relation:

$$m\lambda = d (1 + \sin \phi)$$

4 where  $m$  = a whole number Bragg diffraction order,  $\lambda$  = wavelength of light in the fiber,  $d$  = a  
5 periodic grating spacing of index modulation in a core of the fiber, and  $\phi$  is an exit angle of said  
6 radiated light beam wherein  $\phi = 0$  is normal to a longitudinal axis of said fiber and further  
7 wherein said grating spacing  $d$  falls within a region  $0.8\lambda < d < 1.2\lambda$ .

1 15. The optical beam steering apparatus of claim 14 wherein said diffraction order is the  
2 fundamental  $m = 1$ .

1 16. The optical beam steering apparatus of claim 13 wherein said source of multi-wavelength  
2 light includes a laser.

1 17. The optical beam steering apparatus of claim 16 wherein said laser is one of a plurality of  
2 lasers.